

ASTRONOMY AND ASTROPHYSICS

A European Journal

Volume 127 1983

Published by Springer International on behalf of the Board of Directors

Astronomy and Astrophysics A European Journal

Board of Directors

Chairman: G. Contopoulos
(Greece)

Vice Chairman: B. Hauck
(Switzerland)

H. Haupt
(Austria)

A. G. Hearn
(The Netherlands)

K. Hunger
(Germany, Federal Republic)

G. Larsson-Leander
(Sweden)

W. Priester
(Germany, Federal Republic)

A. Reiz
(Denmark)

E. Schatzman
(France)

G. Setti
(Italy)

P. Smeyers
(Belgium)

J. Lequeux
(France)

L. Woltjer
(ESO)

Editors-in-Chief

C. Cesarsky
Observatoire de Meudon
92195 Meudon Principal Cedex
(France)
Tel. (1) 534-75-30 ext 368
Telex (042) 270912
obsastr meudon

M. Grewing
Astronomy and Astrophysics
Editorial Office
Keplerstrasse 17
7400 Tübingen
(Fed. Rep. of Germany)
Tel. (07071) 294982
Telex (07) 262714 ait d

Letter-Editor

S. R. Pottasch
Kapteyn Astronomical Institute
P. O. Box 800
9700 AV Groningen
(The Netherlands)
Tel. 050-116643
Telex (044) 53572 stars ul

Editing Secretaries

Miss B. Perche
Mrs. M. Rougeot

Mrs. V. Berchtold

Ms. L. Flipse

The exclusive copyright © for all languages and countries, including the right for photomechanical and any other reproduction, also in microform, is vested in European Southern Observatory (ESO).
The use of registered names, trademarks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

Springer-Verlag KG · Berlin · Heidelberg · New York
Printed in Germany
Printers: Brühlsche Universitätsdruckerei, Gießen

Contents

Stellar Structure and Evolution

(LE) The binary nature of the central star of the planetary nebula LT-5 Schnell, A., Purgathofer, A.	L5	(RN) On the evolution to red giants Weiss, A.	411
Period-activity relations in close binaries Vilhu, O., Rucinski, S.M.	5	(RN) On the variability of σ Vel Haefner, R., Wuensch, J.	413
(LE) HZ Herculis, still active Delgado, A.J., Schmidt, H.U., Thomas, H.-C.	L15	(RN) Membership of above horizontal branch stars in the globular cluster NGC 5466 Brosche, P., Geffert, M.	415
Physical properties and evolution of the two white dwarfs in the Sanduleak-Pesch binary Greenstein, J.L., Dolez, N., Vauclair, G.	25		
R 127: an S Dor type variable intermediate between Of and WN Stahl, O., Wolf, B., Klare, G., Cassatella, A., Krautter, J., Persi, P., Ferrari-Toniolo, M.	49		
The maser strength of OH/IR stars, evolution of mass loss and the creation of a superwind Baud, B., Habing, H.J.	73		
Violet and ultraviolet continua of W UMa systems on the basis of uvby photometry observations Rucinski, S.M.	84		
Mass-luminosity relation and initial mass function at the faint end of the main sequence. Is there a real deficit of very low-mass stars? D'Antona, F., Mazzitelli, I.	149		
Magnetic braking and tidal energy dissipation in close binaries Verbunt, F., Hut, P.	161		
Phase dispersion minimization period analysis of the β Cephei star β Crucis Cuypers, J.	186		
Searches for gamma ray emission from radio pulsars Thompson, D.J., Bertsch, D.L., Hartman, R.C., Hunter, S.D.	220		
(RN) The λ Boo stars: a reappraisal Hauck, B., Slettebak, A.	231		
<i>Erratum:</i> Photoelectric photometry of peculiar and related stars. II. Δ -photometry of 339 southern Ap-stars Maitzen, H.M., Vogt, N.	244		
Evolution of pulsar magnetic field axis orientation Nowakowski, L.A.	259		
Overshooting from convective cores and the occurrence of loops in the HRD. II. Evolution of $5 M_{\odot}$ stars to the Cepheid phase Huang, R.Q., Weigert, A.	309		
Low state hard X-ray emission from A0535+26 Polcaro, V.F., Bazzano, A., La Padula, C., Ubertini, P., Manchanda, R.K.	333		
(RN) On the evolution to red giants Weiss, A.	411		
(RN) On the variability of σ Vel Haefner, R., Wuensch, J.	413		
(RN) Membership of above horizontal branch stars in the globular cluster NGC 5466 Brosche, P., Geffert, M.	415		
		Stellar Atmospheres	
(LE) Superionization in the A0V star HD 119921 Molaro, P., Morossi, C., Ramella, M., Franco, M.	L3		
(LE) The Al/Mg abundance ratio in halo stars Aрпigny, C., Magain, P.	L7		
Ca II K emission diagnostics. I. The widths and the strengths in a one-dimensional model Marmolino, C., Severino, G.	33		
(RN) Boss 1985: mass loss investigation based on IUE spectra Che, A., Reimers, D.	227		
PSR 0950+08: a model for interpulse emission Gil, J.	267		
The Sun among the stars. VII. The H α profile of the Sun and the solar analog 16 Cygni B Hardorp, J., Tomkin, J.	277		
On the rapid spectral variability of Be-stars: high spectral resolution study of γ Cas, φ Per, and 59 Cyg Chalabaev, A., Maillard, J.P.	279		
Coronal activity in F-, G-, and K-type stars. I. Relations between parameters characterizing stellar structure and activity Schrijver, C.J.	289		
IUE observations of the eclipsing binaries TV Cas and YZ Cas <i>de Landtsheer, A.C., Mulder, P.S.</i>	297		
Determination of mass-loss rates from early-type stars on the basis of "log (W_1) - log(W_1^0)" diagrams Surdej, J.	304		
Investigation of IUE spectra of the Cp star ET And (HD 219749) Barylak, M., Rakos, K.D.	366		
		Galactic Structure, Stellar Dynamics	
A list of candidates for high-velocity Ap stars Jaschek, C., Jaschek, M., Gómez, A., Grenier, J.S.	1		
On the dynamical evolution of spiral galaxies Bertin, G.	145		
The hydrodynamic motions of OB stars Quiroga, R.J., Tarsia, R.	245		

Orbits as building blocks of a barred galaxy model	
<i>Athanassoula, E., Bienaymé, O., Martinet, L., Pfenniger, D.</i>	349
Interstellar Matter	
(LE) Observations of SO ₂ and HCS ⁺ in cold molecular clouds	
<i>Irvine, W.M., Good, J.C., Schloerb, F.P.</i>	L10
(LE) Non-metastable ammonia absorption toward compact H II regions	
<i>Wilson, T.L., Mauersberger, R., Walmsley, C.M., Batra, W.</i>	L19
The Crab Nebula. II. Near-infrared spectrophotometry of a bright filament	
<i>Dennefeld, M., Péquignot, D.</i>	42
Young stars and bubbles in the Large Magellanic Cloud	
<i>Braunfurth, E., Feitzinger, J.V.</i>	113
The physical structure of the globule B 335	
<i>Krügel, E., Stenholm, L.G., Steppe, H., Sherwood, W.A.</i>	195
An H76z survey of galactic H II regions: electron temperature and element gradients	
<i>Wink, J.E., Wilson, T.L., Biegging, J.H.</i>	211
(RN) Further observations of the N=1→0 transition of C ₂ H	
<i>Bell, M.B., Matthews, H.E., Sears, T.J.</i>	241
A comparison of UV extinction in Sco OB2 and Per OB1 associations	
<i>Kretowski, J., Strobel, A.</i>	271
Theoretical radio continuum maps of H II regions in the champagne phase	
<i>Yorke, H.W., Tenorio-Tagle, G., Bodenheimer, P.</i>	313
A VLA observation of the planetary nebula K 648 in Messier 15	
<i>Gathier, R., Pottasch, S.R., Goss, W.M.</i>	320
Neon abundances in nearby H II regions	
<i>Thum, C., Nishimura, T.</i>	383
Formaldehyde towards compact H II: densities and isotope ratios	
<i>Henkel, C., Wilson, T.L., Walmsley, C.M., Pauls, T.</i>	388
(RN) Approximated collisional rates for CS-H ₂ (J=0)	
<i>Albrecht, M.A.</i>	409
(RN) Mid-infrared maps of the Orion molecular cloud core	
<i>Lee, T.J., Beattie, D.H., Geballe, T.R., Pickup, D.A.</i>	417
(RN) Observations of microwave transitions of A-state acetaldehyde in Sgr B2	
<i>Bell, M.B., Matthews, H.E., Feldman, P.A.</i>	420
Galaxies and Cosmology	
Composite models for the narrow emission line region of active galactic nuclei. I. The infalling filament	
<i>Contini, M., Aldrovandi, S.M.V.</i>	15
(LE) Quasi-simultaneous optical and UV observations of OJ 287 during an active period in 1983	
<i>Maraschi, L., Tanzi, E.G., Treves, A., Falomo, R.</i>	L17
The spectroscopic nature of a sample of faint objects with ultraviolet excess	
<i>Kron, R.G., Bónoli, F., Federici, L., Zitelli, V., Vigotti, M.</i>	29
Galactic evolution of the lithium isotopes	
<i>Audouze, J., Boulade, O., Malinie, G., Poilane, Y.</i>	164
A survey of the distribution of λ 2.8 cm radio continuum in nearby galaxies. IV. NGC 253	
<i>Klein, U., Urbank, M., Beck, R., Wielebinski, R.</i>	177
Radio continuum emission of nearby elliptical galaxies: statistical properties	
<i>Hummel, E., Kotanyi, C.G., Ekers, R.D.</i>	205
(RN) One-sided ejection in the prototype tailed radio galaxy 3C 129?	
<i>Jägers, W.J., de Grijp, M.H.K.</i>	235
(RN) The relation between the luminosity of the brightest blue star and the luminosity of its parent galaxy	
<i>Schild, H., Maeder, A.</i>	238
Mass flow rates in quasars	
<i>Allan, P.M.</i>	254
Spatial structure of the extended ionized nebulosity around the radio galaxy IC 5063	
<i>Bergeron, J., Durret, F., Boksenberg, A.</i>	322
The large-scale radio structure of Fornax A	
<i>Ekers, R.D., Goss, W.M., Wellington, K.J., Bosma, A., Smith, R.M., Schweizer, F.</i>	361
M33. II. A comparison of radio and optical data	
<i>Berkhuijsen, E.M.</i>	395
The Sun	
Brightness temperature of solar radio noise storm continua	
<i>Kerdaon, A., Mercier, C.</i>	132
The circularly polarized Sun at 12.6 cm wavelength	
<i>Lang, K.R., Willson, R.F.</i>	135
Spatial energy spectra of the velocity and magnetic fields in solar active regions	
<i>Berton, R.</i>	140
Current sheet models for solar prominences. II. Energetics and condensation process	
<i>Malherbe, J.M., Priest, E.R., Forbes, T.G., Heyvaerts, J.</i>	153
Dynamics of a surge observed in the C IV and H alpha lines	
<i>Schmieder, B., Vial, J.-C., Mein, P., Tandberg-Hanssen, E.</i>	337
Planetary Systems	
Theory of the phenomena of Jupiter's Galilean satellites (Text in French)	
<i>Thuillot, W.</i>	63
The large C-type asteroid 423 Diotima: rotation period, lightcurve and implications for a possible satellite	
<i>Schober, H.J.</i>	301
Evolution and decay of the peculiar meteor stream associated with Comet Lexell	
<i>Carusi, A., Kresáková, M., Valsecchi, G.B.</i>	373
Celestial Mechanics and Astrometry	
Continuing investigation of sweeping Jovian resonances. The 7:3 and 3:2 resonances with further discussion of the 2:1 resonance	
<i>Torbett, M.V., Smoluchowski, R.</i>	345
Physical Processes and Astrophysical Plasmas	
(LE) Detection of magnetomultipole radiation from neutron stars	
<i>Lipunov, V.M.</i>	L1
Estimated Stark widths and shifts of neutral atom and singly charged ion resonance lines	
<i>Lakićević, I.S.</i>	37

Stark broadening of Si II and Si III spectral lines <i>Dimitrijević, M.S.</i>	68
The structure of oblique MHD cosmic-ray shocks <i>Webb, G.M.</i>	97
Hadron resonance cooling of relativistic e ⁺ - e ⁻ plasmas <i>Schlickeiser, R.</i>	201
(RN) On the line profile coefficient for stimulated emission <i>Cooper, J., Hubený, I., Oxenius, J.</i>	224
Stark broadening of hydrogen lines: new results for the Balmer lines and astrophysical consequences <i>Stehlé, C., Mazure, A., Nollez, G., Feautrier, N.</i>	263
Instruments, Data Processing, and Numerical Methods	
IRAS Circular No. 3	C1
Acoustic waves in early-type stars. I. An efficient method for the computation of thermodynamic quantities in time-dependent stellar atmosphere calculations <i>Wolf, B.E.</i>	93
A hard X-ray imaging experiment using a coded mask telescope prototype <i>Cardini, D., Badiali, M., Emanuele, A., Farina, G., Gianni, G., Ranieri, M., Catanesi, G., Maggi, G., Selvaggi, G., Waldner, F.</i>	169
Abstracts of Articles Which Are Being Published in A. & A. Suppl. Ser. 54, No. 1	
Neutral hydrogen observations of double spiral galaxies. III. NGC 3504/3512, NGC 4085/4088, IC 65/UGC 622, NGC 797/801 <i>van Moorsel, G.A.</i>	423
Neutral hydrogen observations of double spiral galaxies. IV. NGC 4618/4625, NGC 4016/4017, NGC 3725/UGC 6528, UGC 725/728, NGC 2336/IC 467 <i>van Moorsel, G.A.</i>	423
Micrometer measurements of visual binaries <i>Morel, P.J.</i>	423
381 astrometric positions of minor planets obtained at the GPO telescope of ESO, La Silla, February/March, 1981 <i>Debehogne, H., Machado, L.E., Caldeira, J.F., Vieira, G.G., Netto, E.R., Le Van Suu, A.</i>	424
Four-colour uvby and H β photometry of A5 to G0 stars brighter than 8.3 <i>Olsen, E.H.</i>	424
A catalogue of Jovian decametric radio observations from January 1980 to December 1981 <i>Leblanc, Y., Gerbault, A., Rubio, M., Genova, F.</i>	424
Four-colour photometry of eclipsing binaries. XVI. Light curves of VV Pyxidis <i>Clausen, J.V., Nordström, B.</i>	425
Four-colour photometry of eclipsing binaries. XVII. Light curves of DM Virginis <i>Andersen, J., Clausen, J.V., Nordström, B.</i>	425
Catalogue of non-stellar molecular maser sources and their probable infrared counterparts in the galactic plane <i>Braz, M.A., Epchtein, N.</i>	425
Contribution to the study of F, G, K, M binaries. II. Orbital elements of the single-lined spectroscopic binaries HD 69148 and HD 85091 <i>Carquillat, J.M., Nadal, R., Ginestet, N., Pédoussaut, A.</i>	425
Positions of asteroids obtained with the CERGA Schmidt telescope <i>Hahn, G., Heudier, J.L., Lagerkvist, C.I.</i>	426